

THE EVOLUTION OF STELLAR DYNAMOS and
SURVEY FOR LOW MASS MEMBERS OF NGC2232

Grant NAG5-2203

Annual Performance Report No. 1

For the period 1 March 1995 through 29 February 1996

Principal Investigator:

Dr. Charles F. Prosser

January 1996

Prepared for
National Aeronautics and Space Administration
Washington, D.C.

Smithsonian Institution
Astrophysical Observatory
Cambridge, Massachusetts 02138-1596

The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

The NASA Technical Officer for this grant is Dr. Robert Petre, Code 666, Laboratory for High
Energy Astrophysics, Space Sciences Directorate, Goddard Space Flight Center, Greenbelt, MD
20771

The Evolution of Stellar Dynamos and
Survey for Low Mass Members of NGC2232
Grant NAG5-2203
Annual Performance Report No. 1
For the Period 1 March 1995 through 29 February 1996

This is the fifth performance report (the first on an annual rather than semi-annual basis) for our ROSAT grant NAG5-2203.

With regard to the ROSAT/Stellar Dynamos project involving an HRI observation of the open cluster IC4665, Drs. Mark Giampapa and Charles Prosser received reprocessed data in October 1995 for a 33 ksec HRI observation representing the first half of the total observation for IC4665. The second half of the total 70 ksec observation is scheduled for observation in March 1996. Meanwhile, M. Giampapa is currently reducing and analyzing the first half of the observation. Initial analysis shows that there are about 25 x-ray sources in the HRI field which can be matched to known, cataloged, optical counterparts in the cluster region, with spectral types ranging from A-type to M-type dwarfs. During December 1995, C. Prosser spent two days visiting M. Giampapa to discuss reduction and analysis of the first observation in IC4665. During this period, C. Prosser finished reducing FAST 60-inch spectra to derive spectral type information among cluster members, which will contribute to the optical database of information for this cluster that will be combined with the x-ray data. Additional spectral data in IC4665 is expected during the spring of 1996. Finally, during October 1995 some photometric monitoring among some M-type cluster members was obtained in an attempt to derive rotation periods for these stars based on brightness variations arising from starspots. Any rotational period information derived from these observations will be used to investigate the rotation-x-ray activity relation among M dwarfs in this cluster.

For NGC2232, two ROSAT HRI fields in this cluster are to be observed. So far, C. Prosser has received only a partial observation of one field, taken in April 1995. The remaining observation time was scheduled for September/October 1995, but the data has not reached the PI yet. The initial partial observation received reveals approximately 20 x-ray sources in the region; some low and high resolution spectra were obtained for optical counterparts to a few of these sources during a December/January MMT observing run at Mt. Hopkins. More complete and extensive analysis of the x-ray data will occur once all the x-ray observations for the two HRI fields in the cluster have been supplied to the PI.

